

Swift Command Power Control System.....	78
Control Panel Operation	80
Residual Current Device & Miniature circuit breakers	83
Battery charger.....	84
Leisure Battery	84
12 Volt DC Fuses	86
Solar charge management.....	87
Mains charging	87
Water pump operation.....	88
Water tank heaters	88
AC current limiter operation	88
Lighting and dimming operation.....	88
Heating controls	89
Other controls	90
Bluetooth pairing	90
System warnings.....	90
Electrical faults.....	92
Technical Data & Approvals	95
Battery box	97
Battery installation	98
Solar panel connection point	99
Solar panel energy system.....	99
Generator usage	100
Habitation relay.....	100
Exterior 230v socket.....	101
Internal USB socket.....	101

SWIFT COMMAND POWER CONTROL SYSTEM

EC600 / Swift Command

1. Introduction

This section of the handbook will guide you through the operation of the electrical system.

Further technical details are contained in section 3 or in the supporting technical manual available from www.sargentltd.co.uk

For the safe operation of all electrical equipment within your Leisure Vehicle it is important that you read and fully understand these instructions. If you are unsure of any point please contact your dealer / distributor for advice before use.

The system has a number of key components that you will need to be familiar with before attempting to use the system, these are:

- **The EC601 & EC651 Power Supply Unit (PSU)** - a combined mains consumer unit and 12V controller located in the bed box or upper locker.
- **The EC620 Control Panel (CP) -** a remotely located user control panel used to turn circuits on and off and to display battery, water tank and other system information. This panel uses simple straightforward controls and reliable data communication to the PSU. This is mounted over the exterior door.

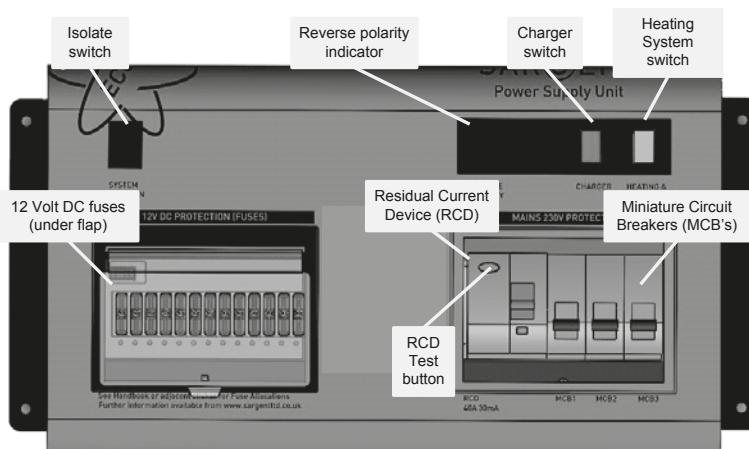
- **The PX300 Intelligent Battery charger 300W located under the bed or lower unit close to the PSU**

- **The C44 Road Light Fuse Box -**

This small unit, which is unique to caravans, is located in the front bed box. The unit houses fuses for the road lighting circuits and supplies from the tow vehicle, and also has connectors for the optional alarm system and Automatic Trailer Control (ATC) unit.

- **Control App and Swift Command web site.**

The Swift Command app can be downloaded from the Apple App store, Android Play store or Windows store, and provides many features to view information and change settings relating to the Swift Command system, using a Bluetooth connection between phone/tablet and control system. Outside of Bluetooth range, the Swift Command website also allows control of some features, as well as providing information and historical data on your caravan. An account for use with these services will be created and described to you by your dealer at vehicle handover – if this is for any reason not possible, or further information is required, please visit www.sargentltd.co.uk where full details are available.



2. Using the System

2.1 Power Supply Unit- Component Layout

The PSU is located in the front offside bed box area in caravans, and in similar locations in motorhomes.

2.2 Activating the System

The EC600 system has a shutdown feature that can be used when the vehicle is in storage. This allows the leisure electronics to be turned off when not required to save battery power. When in the off state the solar panel charge, the alarm and tracking system supplies and are still active, all other supplies are turned off.

Before using the system please ensure the system shutdown switch is in the on position (button in).

2.3 Connecting to the Mains 230V supply and Safety checks

For your safety it is IMPORTANT that you follow these connections instructions each time your Leisure Vehicle is connected to a mains supply. This section assumes that the system is complete and that a Leisure battery has been installed (see 3.4).

A) Ensure suitability of the Mains Supply.

Your Leisure Vehicle should only be connected to an approved supply that meets the requirements of BS7671 or relevant harmonised standards. In most cases the site warden will hold information regarding suitability of supply. If using a generator you also need to comply with the requirements / instructions supplied with the generator. Please note that some electronic generators may not be compatible with your leisure system. Further generator operational information is contained elsewhere in this manual.

B) Switch the PSU internal Power Converter OFF.

Locate the green 'Charger' power switch on the PSU and ensure the switch is in the off position (button out) before connection to the mains supply.

C) Connect the Hook-up Lead. Firstly connect the supplied hook-up lead (orange cable with blue connectors) to the Leisure Vehicle and then connect to the mains supply.

D) Check Residual Current Device operation. Locate the RCD within the PSU and ensure the RCD is switched on (lever in up position). Press the 'Test' button and confirm that the RCD turns off (lever in down position). Switch the RCD back to the on position (lever in up position). If the test button failed to operate the RCD see section 3.17.

E) Check Miniature Circuit Breakers. Locate the MCB's within the PSU (adjacent to the RCD) and ensure they are all in the on (up) position. If any MCB's fail to 'latch' in the on position see section 3.17.

F) Turn the PSU ON. Locate the black 'Shutdown' button and ensure it is in the on position (press button in). Locate the green 'Charger' switch on the PSU and turn to the on position (press button in). The charger switch will illuminate when turned on.

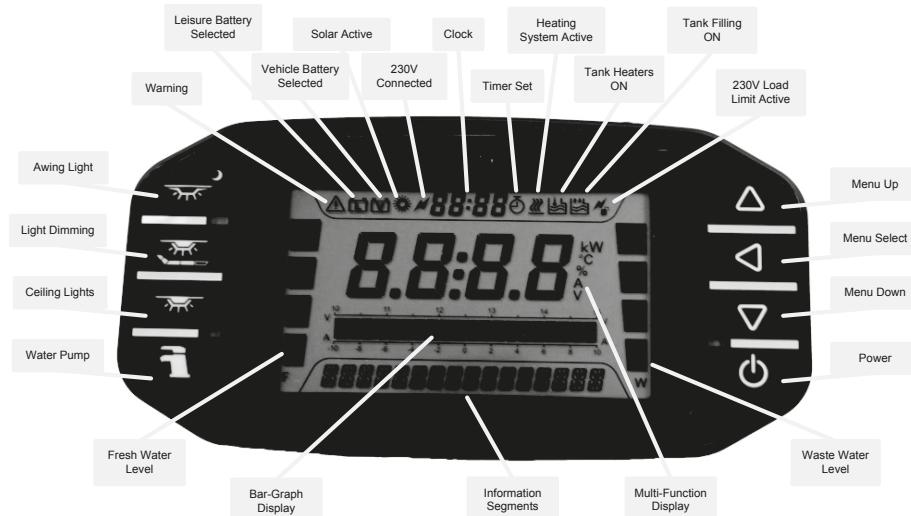
G) Check correct Polarity. Locate the 'Reverse polarity' indicator on the PSU and ensure that the indicator is NOT illuminated. If the indicator is illuminated see section 3.17.

H) Check operation of equipment. It is now safe to operate the 12V and 230V equipment.

SWIFT COMMAND POWER CONTROL SYSTEM

2.4 Control Panel - Component Layout

Your control panel will have an appearance as below, but depending on your type of vehicle (caravan or motorhome) the control panel features will vary. Not all features are present in all vehicles.



	<p>Power Button. Press the power button to turn the leisure power on. Press the button again to turn the power off. The adjacent LED will illuminate when the power is on, the screen backlight will turn on and system information will be shown on the LCD display. To avoid night time nuisance the LED and backlight will be turned off after a preset time, see note below.</p>
	<p>Menu Navigation Up Button. Use the menu up and down buttons to scroll through the various functions. The menu operates on a continuous loop arrangement so you can go up or down to reach all menu items. It is recommended to start in the down direction.</p>
	<p>Menu Navigation Select Button. Use the select button make a selection or to change a value or setting. This button is also used to select the display or toggle the display information on many menu items.</p>
	<p>Menu Navigation Down Button. Use the menu up and down buttons to scroll through the various functions. The menu operates on a continuous loop arrangement so you can go up or down to reach all menu items. It is recommended to start in the down direction.</p>



Menu Tree



- **Leisure battery**, the leisure battery voltage and charging or discharging current is displayed. Use the select button to toggle the display, with voltage on the main display whilst current (in or out of the battery) is shown on the bargraph and vice-versa, current on the main display and voltage on the bargraph.
- **Vehicle battery**, when connected the vehicle battery voltage and charging or discharging current is displayed. Use the select button to toggle the display, with voltage on the main display whilst current (in or out of the battery) is shown on the bar-graph and vice-versa, current on the main display and voltage on the bar-graph.
- **Solar Power**, the charging current from the solar panel along with the voltage of the battery it is charging is displayed. Use the select button to toggle the display, with voltage on the main display whilst current is shown on the bargraph and vice-versa, current on the main display and voltage on the bargraph.
- **Select Battery**, press the select button toggles between the Leisure and Vehicle batteries as the power source (or battery to be charged). The selected battery is shown in the header area.
- **Tank-Fill on/off**, (Caravan Only) Turn tank fill on to start the external water pump and to start transferring water from the external water container to the internal water tank. Tank filling will stop when the onboard tank is full or if more than 7 minutes have elapsed. If not full, then repeat.
- **AC Limit**, the AC current limiter, when enabled, will monitor the incoming AC current and if the set limit is reached the 230V heating element within the heating system will be temporarily turned off until the current falls below the set limit. Use the select button to set the limit or to turn the feature off. The AC Limit icon in the header indicated that a limit is set and will flash if the limiter is active.
- **Temperature & Humidity**, Pressing the select button scrolls through the internal temperature, internal humidity & external temperature readings. Please note that due to the location of the internal temperature sensor there may be slight differences to the temperature shown on the heating system.
- **Dimmer %**, this display shows the lighting dimming level and is adjusted in 5% increments. The display commences where the level was last set. Press the select button to increase the level up to 100% and then back down again to 5%. Pressing the dimming button on the control panel immediately shows this dimming value.
- **Heater Settings**, this sub menu allow the heater controls and associated settings to be adjusted. A full explanation of the controls can be found in the heater section.
- **System Settings**, this sub menu allows a number of system features to be configured like the Clock, Date, Key beep, Backlight time, LED time, Tank Alarms, Bluetooth Pairing etc.

SWIFT COMMAND POWER CONTROL SYSTEM

	Pump Button. With the power on, press the pump button to turn the water pump on. Press the button again to turn the pump off. The adjacent LED will illuminate when the pump is on and the level of the water tank will be shown on the screen.
	Interior Lights Button. With the power on, press the lights button to turn the main lighting supply on or off.
	Light Dimming Button. With the power on, press the dimmer button to turn the dimmed lighting on or off. Press the select button to adjust the dimmer level (the menu automatically changes to the adjustment screen). The last setting is remembered.
	Awnings Light Button. With the power on, press the awning light button to turn the awning light on or off. The adjacent LED will illuminate when the awning light is on. The awning light may also be controlled by a door side switch, the caravan alarm system or the motorhome locking system.

Note: Display illumination. The LCD back light will illuminate for the pre-set time (default time is 30 seconds) adjustable between 5 and 120 seconds. Setting the timer to 0 seconds will force the backlight to be permanently on. The illumination of the blue LED's adjacent to the power, pump & awning light buttons can be configured in the same way as the backlight. The screen will wake up if your hand is placed near the panel or if a button is pressed.

2.6 Operation while driving

The EC600 system is designed to shutdown parts of the system while the engine is running. This is to meet Electro Magnetic Compatibility (EMC) regulations and to ensure the safe operation of the caravan or motorhome.

Please ensure the system shutdown switch on the PSU is in the on (button in) position before driving (see 2.2). This will ensure the electronic system is active and will therefore be able to control the charging process, supply the refrigerator and monitor other system circuits.

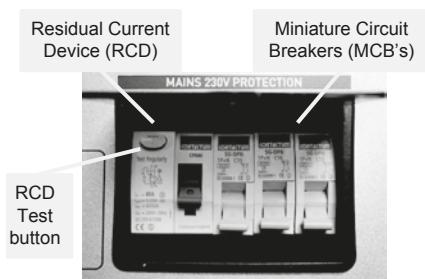
On motorhomes if / when fitted, designated 12V sockets, en-route reading lights and en-route heating will remain operational while the engine is running.

With the engine running the screen will show ENGINE RUNNING, the leisure and vehicle battery icons will be displayed to indicate they are being charged and the charging voltage will be shown in the main display.

3 System Technical Information

The following section provides further technical information relating to the electrical system. You can also access the supporting technical manual from www.sargentltd.co.uk

3.1 Residual Current Device & Miniature Circuit Breakers



The Residual Current Device (RCD) is basically provided to protect the user from lethal electric shock. The RCD will turn off (trip) if the current flowing in the live conductor does not fully return down the neutral conductor, i.e. some current is passing through a person down to earth or through a faulty appliance.

To ensure the RCD is working correctly, the test button should be operated each time the vehicle is connected to the mains supply (see section 2.3)

The Miniature Circuit Breakers (MCB's) operate in a similar way to traditional fuses and are provided to protect the wiring installation from overload or short circuit. If an overload occurs the MCB will switch off the supply. If this occurs you should investigate the cause of the fault before switching the MCB back on.

The following table shows the rating and circuit allocation for the three MCB's

MCD	Rating	Output Wire colour	Description
1	10 Amps	White	230v Sockets
2	16 Amps	White (Yellow for heater)	Extra 230V Sockets/ heating System
3	10 Amps	Black	Fridge/ Charger/ Auxiliary devices

3.2 Generator Usage

Caution should be used before connecting a generator to your caravan or motorhome.

⚠ WARNING: Never start or stop the generator while electrical loads are connected and switched on. Start the engine, let it stabilise and then connect the electrical load. To stop the engine, disconnect the electrical load and let engine stabilise before switching off

Whilst some generators use electronic inverter technology, others use a more basic principle to generate the 230V supply. Preference should be to choose a generator which produces a consistent sinusoidal wave form with accurate voltage control.

The Reverse Polarity warning light on the PSU may illuminate when using a Generator. This is a normal side effect when using some types of generator. Instead of connecting the neutral conductor to earth, some generators centre tap the earth connection making both neutral and live conductors 110V above earth. This 110V difference causes the neon polarity indicator to illuminate.

In most cases it is safe to use a generator, but please consult the generator handbook for further information.

SWIFT COMMAND POWER CONTROL SYSTEM

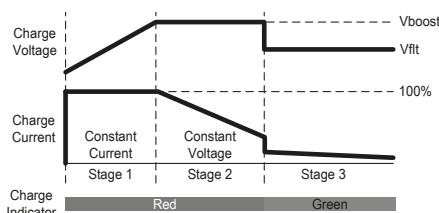
3.3 Battery Charger

The system incorporates an intelligent three-stage battery charger.

During stage 1 the battery voltage is increased gradually while the current is limited to start the charging process and protect the battery. At stage 2 the voltage rises to 14.4V to deliver the bulk charge to the battery. When the battery is charged, the voltage is decreased at stage 3 to 13.6V to deliver a float charge to maintain the battery in the fully charged state. The charger can be left switched on continuously as required.

The battery charger / power converter also provides power to the leisure equipment when the mains supply is connected. This module supplies DC to the leisure equipment up to a maximum of 25 Amps (300 Watts), therefore the available power is distributed between the leisure load and the battery, with the leisure load taking priority as per the following example:

Leisure Load	Available power for battery charging
5A	20A
10A	15A
15A	10A
20A	5A



⚠️ WARNING: Under heavy loads the Battery Charger case may become hot. **ALWAYS** ensure the ventilation slots have a clear flow of air. Do not place combustible materials against / adjacent to the charger.

3.4 Leisure Battery

A) Type/Selection

For optimum performance and safety it is essential that only a proprietary brand LEISURE battery is used with a typical capacity of 75 to 120 Ah (Ampere / hours). A normal car battery is NOT suitable. This battery should always be connected when the system is in use.

The PSU is configured to work with standard lead acid leisure batteries, and in most cases is also compatible with the latest range of Absorbed Glass Matt (AGM) batteries. Before fitting non-standard batteries please check that the charging profile described in 3.3 is suitable for the type of battery by referring to the battery documentation or battery manufacturer.

Some vehicle installations can cater for two leisure batteries connected in parallel. In these cases it is recommended that two identical batteries are used.

The battery feed is fitted with an inline fuse between the battery and the electrical harness, and is usually located immediately outside the battery compartment or within 500mm of the battery. The maximum rating of this fuse is 20A per battery. If a single battery is fitted to a motorhome, this fuse could be up to 40A, however if two batteries are fitted each battery should be fused at a maximum of 20A.

B) Installation & Removal

Always disconnect the 230V mains supply and turn the PSU green charger switch to the off position (button out) before removing or installing the battery.

When connecting the battery, ensure that the correct polarity is observed (black is negative [-] and red is positive [+]) and that the terminals are securely fastened. Crocodile clips must not be used.

⚠️ WARNING: Explosive gases may be present at the battery. Take care to prevent flames and sparks in the vicinity of the battery and do not smoke.

C) Operation / Servicing

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of the terminals and “topping up” of the battery fluid where applicable. Please see instructions supplied with the battery.

Note: Do not over discharge the battery. One of the most common causes of battery failure is when the battery is discharged below the recommended level of approximately 10V. Discharging a battery below this figure can cause permanent damage to one or more of the cells within the battery.

To prevent over discharge, the EC600 system incorporates a battery protect circuit that warns the users and then disconnects the batteries when they fall below set values.

If a warning is active a beep will be emitted by the control panel and information will be shown on the screen. To cancel the warning, press the select button. These warnings will not be repeated unless the power switch is turned off and on again. This is to ensure the warning does not become a nuisance.

Battery	Voltage cut off	Action after cut off	Notes
Vehicle	10.9V	Battery selection is changed from Vehicle battery to Leisure battery. If the leisure battery is below 9v then a further warning will occur (see below).	This cut off level is designed to protect the vehicle battery from over discharge. The 10.9V level ensures there is sufficient power in the battery to run the vehicle electronics and start the vehicle. This cut off only applies to power drawn from the battery by the leisure equipment; it will not protect the battery if you leave vehicle circuits switched on, such as the road lights.
Leisure	9V	Power is turned off	<p>This is an emergency cut off level to protect the battery from severe damage. You should not rely on this cut off level during normal operation, but manage your power consumption to a discharge level of about 11.5V.</p> <p>This cut off only applies to power drawn from the battery by the leisure equipment that is controlled by the control panel power switch; it will not protect the battery from discharge by permanently connected equipment.</p>

SWIFT COMMAND POWER CONTROL SYSTEM

3.5 12 Volt DC Fuses

⚠ WARNING: When replacing fuses always replace a fuse with the correct value. **NEVER** replace with a higher value / rating as this could damage the wiring harness. If a replacement fuse 'blows' do not keep replacing the fuse as you could damage the wiring harness. Please investigate the fault and contact your dealer.

The following table shows the fuse allocation for the 13 fuses fitted to the PSU. Please note that fuses are dependant on PSU versions, so not all fuses may be present.

Fuse	Rating	Fuse colour	Description
1	25 Amps	White	Charger
2	7.5 Amps	Brown	Permanent 12V/ Alarm/ Fridge Electronics/ Alde Heating
3	10 Amps	Red	12V Sockets/ TV Amplifier/ Radio (Caravan Only)
4	10 Amps	Red	Extractor Fans/ Truma Heating
5	5 Amps	Tan	Appliances/Hob Ignition/Toilet
6	10 Amps	Red	Water Pumps/Tank Heaters (Motorhomes Only)
7	5 Amps	Tan	Lighting, Main Lights & Dim Channel 1
8	5 Amps	Tan	Lighting, Entry Light & Dim Channel 2
9	10 Amps	Red	Spare Outputs/ Marker Lights/ (En-Route Sockets & Lights Motorhome Only)
10	10 Amps	Red	Auxiliary/ Awning Light/ Electric Step (Motorhomes Only)
11	20 Amps	Yellow	Fridge 12V (Motorhome Only)
12	15 Amps	Blue	Towing 12V (Motorhome Only)
13	15 Amps	Blue	Fridge D+ (Motorhome Only)

Note: Fuses (2-13) have a Red LED below them which provides indication that the fuse has blown. The charger fuse has a green LED which indicates that the charger is working.

The following table shows details of the fuse(s) located at the Leisure battery. See also 3.4A

Fuse	Rating	Fuse colour	Description
Battery 1	20 Amps	Yellow	Fuse remotely located near battery
Battery 2	20 Amps	Yellow	Fuse remotely located near battery 2 (where fitted)

The following table shows details of the fuse(s) located at the Road Light fuse box I (caravans only)

Fuse	Rating	Fuse colour	Description
1	20 Amps	Yellow	Fridge Supply
2	5 Amps	Tan	Left Hand Tail Lights
3	5 Amps	Tan	Right Hand Indicators
4	5 Amps	Tan	Fog Lights
5			Spare location
6	20 Amps	Yellow	Car Battery Supply
7	5 Amps	Tan	Right Hand Tail Lights
8	5 Amps	Tan	Left Hand Indicators
9	7.5 Amps	Brown	Stop Lights
10	5 Amps	Tan	Reverse Lights

3.6 Solar Charge Management

The EC601/651 PSU incorporates a built-in solar charge management feature, which will monitor the input from a separate solar panel and regulator. The Solar Active symbol will be displayed on the control panel when there is an amount of energy available to charge the battery. The voltage and current produced from the regulator can be viewed on the multi-function display by selecting the Solar Power menu item. In a motorhome, depending on the charge state of the batteries, the solar power will be directed to the required battery and continuously monitored to ensure optimum operation.

3.7 Mains Charging

The EC651 PSU (Motorhome) incorporates a smart charge feature, which monitors both leisure and vehicle batteries and automatically adjusts and directs the charger power (and solar power if a solar panel is installed) to maintain the leisure and vehicle batteries at an optimal level.

SWIFT COMMAND POWER CONTROL SYSTEM

3.8 Water Pump Operation

The EC620 control panel pump button operates the internal water pump drawing water from an internal tank if fitted, or an external container when no internal tank is fitted.

The system incorporates an automatic tank fill feature (Caravan only). When turned on this will automatically fill the onboard water tank from the external container and will switch off automatically when full. To enable tank fill, select 'Tank-fill on' on the control panel. To ensure the external pump is not damaged if the external tank runs dry, the pump runs for a maximum of 7 minutes.

The water tanks (fresh & waste) incorporate a level warning feature to warn the user when the fresh water level drops below 25% or when the waste water level reaches 100%.

If the water pump power is turned on and the fresh water level drops to below 25% a warning beep will be heard and a message will be displayed on the control panel. To cancel the warning, press the select button.

If the water pump power is turned on and the waste water level rises to full (100%) a warning beep will be heard and a message will be displayed on the control panel. To cancel the warning, press the select button.

These warnings will not be repeated unless the water pump power switch is turned off and on again. This is to ensure the warning does not become a nuisance.

3.9 Water Tank Heaters (frost protection) Operation

The EC651 (Motorhome only) features the ability to switch on water tank heater to provide frost protection for the fresh and waste tanks. The tank heater symbol is displayed on the control panel when this feature is enabled. The tank heaters will only operate if there is over 25% in the relevant water tank and the external temperature sensor detects that the temperature falls below 2 degrees C. If the temperature rises above this level the heaters will be switched off but the feature will remain on.

3.10 AC Current Limiter Operation

The EC600 system features a 230V current monitoring system which allows the mains hook up current to be displayed on the control panel and the resolution of the display is 0.5A. A current limit setting can be activated which if reached will switch off the electric elements in the heating system, until such time as the current drops and the elements will be switched back on. An example of this is if a kettle was to be operated whilst the heating was on and the current limit was reached then the heater electric element would be temporarily switched off, when the kettle had boiled then the heater element would be switched back on automatically.

This feature is particularly useful when abroad on a low current supply. A warning that the limit has been reached is displayed on the control panel.

Setting the value to OFF will disable this feature.

The Swift Command App can be used to adjust this feature.

3.11 Lighting and Dimming Operation

The system contains up to two dimming channels for groups of lights which can be controlled by the dimmer button. Some motorhome models also feature an additional furniture mounted dimming control.

The awning light on a caravan can be controlled by a number of items within the caravan, the local switch adjacent to the entry door, the alarm system lighting button, the control panel awning light button and the App. Each item can toggle the light on and off.

The awning light on a motorhome can again be controlled by a number of items, the local switch adjacent to the entry door, the control panel awning light button, the App and the lock and unlock system (dependant on system setting being set to do so). Each item can toggle the light on and off.

The Swift Command App can be used to both configure and adjust the lighting and dimming.

3.12 Heating Controls

There are a number of heating systems that can be controlled by the EC600. The system will be preconfigured by the manufacturer. The following menu items are only available in Timer control mode, this example refers to models equipped with Alde heating systems, other heating systems will have similar controls but some options may vary.

Scroll to the Heating Settings and press select to set or adjust the following items:

Menu Item	Description	
Control	<p>Set to Manual to use the controls supplied by the heating appliance manufacturer.</p> <p>Set to Timer to control the appliance by the control panel with the settings below.</p> <p>Set to Remote control the appliance by the Swift Command app.</p> <p>Note: When heating control method is set to 'timer' or 'remote', the ALDE control panel will display information but cannot be used to adjust settings.</p>	
The following menu items are only available when in Timer control mode		
Electric	Set the electric element to off, 1KW, 2KW or 3KW	
Gas	Set gas heating on or off	
Timer 1	Set the timer 1 event time. This setting adjusts in 15 minute increments and uses the 20 hour clock.	Example 07:30
T1 Heating	Set the timer 1 heating temperature. This setting can be off, or 5 through to 30 degrees C	Example 22 deg C
T1 H/Water	Set the timer 1 hot water temperature. This setting can be off, 40 deg C, 60 deg C or Boost	Example 40 deg C
The menu now repeats for timer 2 through to timer 4		
Exit Settings	When timer 4 is completed the exit settings item is reached. Press the select button to exit and save the settings.	

The timer example above will set the heating to 22 degrees C and the hot water to 40 degrees C at 7:30 in the morning.

SWIFT COMMAND POWER CONTROL SYSTEM

3.13 Other Controls

The main control panel will display the software version number of both the Control Panel and the PSU. On the EC620 menu item press the select button to display software information.

3.14 Bluetooth Pairing

Using the control panel, access the System Settings menu and then scroll to the Bluetooth pairing section. Press the select button to start pairing, the power button LED will flash to indicate the pairing mode. You can now pair your device to the system following the devices instructions to add a Bluetooth item. Pairing remains on for 1 minute and is then turned off automatically.

Up to 4 Bluetooth devices can be paired. It is possible to clear all paired devices, to pair alternative devices.

3.15 System Warnings

The system incorporates a number of warnings that are active at specific times. These are summarised below, and also covered by relevant sections of this manual.

When a warning is active a triangle will be displayed in the control panel header area.

Warning	When	Type
Fresh water level low	With pump turned on and fresh water level low (less than 25% full). Only available when an on-board tank is fitted	Message on screen and 30 second audible beep
Leisure battery voltage low	With control panel power on and leisure battery selected (as active battery) and the voltage level falls below 10V.	Message on screen and 30 second audible beep.
	With control panel power on and leisure battery selected (as active battery) and the voltage level is below 9V.	Message on screen and 30 second audible beep. If no action taken after 30 seconds then the system will switch the power off to prevent severe discharge of the battery.
	Note: This is an emergency cut off level to protect the battery from severe damage. You should not rely on this cut off level during normal operation, but manage your power consumption to a discharge level of 11.5V or above. This cut off only applies to power drawn from the battery by the leisure equipment that is controlled by the control panel power switch; it will not protect the battery from discharge by permanently connected equipment.	
Leisure battery voltage high	With control panel power on or off and leisure battery is selected (as active battery) and the voltage level rises above 15V.	Message on screen and repeated beeps from the control panel. The power is automatically turned off. The beeping will not stop until the fault is cleared.
Vehicle battery warnings	If the vehicle battery is selected instead of the leisure battery, then similar warnings to those described above are applied to the vehicle battery. The vehicle battery low warning level is 10.9V.	
Engine running	When the engine is started the system power will be turned off.	Message on screen, Leisure & Vehicle battery symbols indicating both batteries are connected for charging. The charging voltage is also shown on screen.
Mains lead (hook-up cable) still connected / plugged in	When the engine is started and the mains cable is still plugged in and the charger is switched on.	Message on screen and repeated beeps from the control panel. The beeping will not stop until the hook-up lead is removed.

SWIFT COMMAND POWER CONTROL SYSTEM

3.16 Common Fault Table

Fault	Possible Cause	Proposed Fix
No 230 volt output from PSU	Connecting lead between the site and Leisure Vehicle not connected	Check and connect lead as per 2.3C
	RCD switched off	Reset RCD as per 2.3D
	RCD not operating correctly	Check supply polarity; if the RCD continues to fail contact your Dealer as there is probably an equipment or wiring fault.
	MCB switched off	Reset MCB by switching OFF (down position) then back ON (up position), if the MCB continues to fail contact your Dealer as there is probably an equipment or wiring fault.
	No or deficient supply from site	Contact site Warden for assistance
	Other fault	Contact your Dealer
Reverse Polarity light is illuminated on PSU	Mains Supply reversed?	The reverse polarity light is designed to illuminate when the Live and Neutral supply has been reversed / crossed over. If the light illuminates there is a problem with the site supply or the cable connecting the supply to your vehicle. The light is designed to work on UK electrical supplies (where the neutral conductor is connected to earth at the sub station). If you are using your vehicle outside the UK this light may illuminate when no fault exists. In these cases consult the site warden for advice.
	Generator being used	'The Reverse Polarity warning light is on when using my Generator'. This is a normal side effect when using some types of generator. Instead of connecting the neutral conductor to earth, some generators centre tap the earth connection making both neutral and live conductors 110V above earth. This 110V difference causes the neon polarity indicator to illuminate. In most cases it is still safe to use the generator, but please consult the generator handbook for further information.
Pump not working	Fuse blown	Replace fuse with correct value as per fuse table.
	Pump turned off	Turn pump on by pressing the pump button at the control panel.
	Setting incorrect	Both the internal and external pump feeds are controlled from the control panel. To alter the setting of the pump switch see section 3.8 Ensure the setting matches your desired requirement.

Control Panel Problems	Control Panel has no display	Check batteries and fuses, turn PSU isolate switch and charger switch on and ensure mains supply is connected. Check control panel connecting lead at PSU and behind Control Panel Contact your Dealer
	12v Power turns off	Battery protect feature has operated to protect the Vehicle battery and or the Leisure battery. See 3.4C Over voltage protection has been activated, the control panel will display a warning. Engine has been started, all equipment has been disconnected to meet EMC requirements. See 2.6
	Control Panel locked / erratic function	Observe control panel handling instructions. Control panel software may have crashed. Reboot control panel by turning off the PSU isolate switch. Wait 30 seconds then turn the switch back on.
No 12 volt output from PSU	No 230v supply	Check all above
	Charger not switched on	Turn charger switch on, switch will illuminate
	Battery not connected and / or charged	Install charged battery as per 3.4
	Power button on control panel not switched to on	Turn power on at control panel
	Battery flat / Battery fuse blown	Recharge battery, check fuses, check charging voltage is present at battery
	Fuse blown	Check all fuses are intact and the correct value fuse is installed as per fuse table
	Equipment switched off / unplugged	Check equipment is switched on and connected to the 12V supply
	Other fault	Contact your Dealer
Lights not working	Fuse/s blown	Replace fuse with correct value as per fuse table.
	Lights turned off	Turn Lights on by pressing the lights button, use dimmer at the control panel.
Communications not working	Bluetooth not paired	Using System Settings menu, select Bluetooth Pair option
	Bluetooth not active on Device	Ensure that the handheld device has Bluetooth switched on and that the device supports the Bluetooth 4 standard (BLE)
	Bluetooth out of range	Ensure the handheld device is within 7M of the middle of the caravan/motorhome

SWIFT COMMAND POWER CONTROL SYSTEM

3.17 Contact Details

Sargent Electrical Services Limited provide a technical help line during office hours. Please contact 01482 678981 if you require technical help. For out of hour support please refer to the tech support section of the Sargent web site www.sargentltd.co.uk

4 Remote Access & Control

4.1 Swift Command App

The Swift Command app can be down loaded from the Apple App Store, the Android Play store or the Windows store.

Your dealer will be able to demonstrate the app and the many features that it provides.

Some of the key features are;

- Power information and Control
- Lighting Control
- Water System Control
- Heating Control
- Tracking
- Alerts & Notifications
- Account and System Settings
- User Manual
- Swift Website Link

Before you can use the App with your caravan or motorhome you will need to create an account and sign up to the free communication service. This is a simple process and will be explained further by your dealer at the vehicle handover. Additional information is available at www.sargentltd.co.uk.

4.2 Swift Command Web usage & Description

In addition to the mobile App, you can also use the same account and login details to access the Swift Command web site, www.swiftcommand.co.uk

Here you can update and amend your details, look at tracking information and history, review system information and historical data as well as changing some system options and settings.

4.3 Swift Command SIM Coverage & Usage information

The EC600 system contains Mobile SIM with 36 month contract, which commences upon activation at the Dealership when a customer is assigned to the caravan/motorhome.

Below is a list of the countries covered by the SIM under a fair usage policy, a complete list is available at request.

Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Liechtenstein, Lithuania, Luxembourg, Netherlands, Malta, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom

4.4 Replacement Parts

The Control panel contains a small lithium battery to maintain the clock when no other energy supplies are available this will last in excess of 5 years under normal conditions. The battery is a CR2032 3.0V.

The EC640 Communication module contains a special backup battery pack which should last in excess of 3 years under normal conditions. The pack part number is 16308 available from Sargent.

4.5 Updates

From time to time there may be updates to the system software; these updates will be done at service intervals by your dealership.

5 Technical Data & Approvals

5.1 Caravan Equipment – EC601, EC651, EC620, EC630 & EC640 Control Equipment

Outline Specification		
INPUT 230V	230 Volts / 0 to 16 Amps	+ / - 10%
OUTPUT 230V	RCD protected, 2 x MCB outputs of 10A & 1 x MCB output of 16A Separate switched channels for heating system and charger	
INPUT 12V	2 x 20A battery inputs via 2 x 4 way connectors	
SOLAR INPUT	1 X Dedicated solar panel input (20 to 150W panel) via a 2 way connector	
OUTPUT 12V	25A total output via multiple switched channels protected by 13 fused outputs	
Integrated CHARGER	Input 220-240 Volts AC +/- 10%, Frequency 50 Hz +/- 6%, Current 3A max. DC Output 13.6 to 14.4 Volts nominal, Current 25 Amps max (300 Watts).	
Signal INPUT	4 x Fresh water level, 4 x Waste water level, 1 x Engine running, plus multiple vehicle connections, sensor inputs for temperature & humidity	Fresh water negative sensed Waste water negative sensed
Data IN / OUT	CANBUS Data communication and power to Control Panel via 6 way connector. CI-Bus Data communication to CI-Bus enabled devices via RJ11/12 connector	
IP rating	IP31	
Operating temperature	Ambient 0 to 35° Celsius Charger case temperature with full load 65° C Max	Automatic shutdown and restart if overheated / overloaded

Dimensions		
EC601 & EC651 PSU	Overall size (HxWxD) 180 x 305 x 135mm Clearances 75mm above, 50mm left & right	Weight 3.8 Kg
EC620 Control Panel	Overall size (HxWxD) 93 x 180 x 32mm Cut-out size (HxW) 82 x 165mm	Fixing centres 166mm X 26MM Weight 150g
EC630 Comms Module	Overall size (HxWxD) 55 x 116 x 85mm	Weight 550g
EC640 Sensor	Overall size (HxWxD) 60 x 27 x 14mm	Weight 80g

SWIFT COMMAND POWER CONTROL SYSTEM

5.2 Approvals

System: BSEN 1648-1, BSEN1648-2
compliant, BS7671: 2008 compliant

Residual Current Device: RCD 40A 30mA trip
to BS EN 61008

Miniature Circuit Breakers: MCB's type C
6000A breaking capacity to BSEN 60898

Electro Magnetic Compatibility (EMC) directive
2004/108/EC Certificate CE20071224-1

Integrated Charger: BS EN 60335-1/2.29,
2006/95EC, IEC61000-3.2/3:1995, 1.

Low Voltage Directive: 2006/95EC TUV-
014900-A1, EN55022, Class B, EN55024/
Level 2

5.2 Declaration of Conformity

Equipment: Leisure Power Control System

Model name: EC601, EC651, EC620 & PX300

I hereby declare that the equipment named
above has been designed to comply with
the relevant sections of the above referenced
approvals. The unit complies with all essential
requirements of the Directives.

Signed	Name	Position	Manufacturer
	I L Sargent	Technical Director	Sargent Electrical Services Ltd Unit 39, Tokenspire Business Park Woodmansey, Beverley East Yorkshire, United Kingdom
Date:			

Whilst every effort has been made to ensure the accuracy and completeness of this document,
no guarantee is given against errors or omissions. This document may be updated / improved
over time therefore please check with your dealer / supplier for update information or visit
www.sargentltd.co.uk

BATTERY BOX

The battery box

The Battery Box is intended to accommodate an auxiliary battery in your caravan. The Battery Box has a CE socket to connect to a 230 V power supply. Inside the Battery Box there is the option to fit several sockets and outlets.

⚠ WARNING:

- Use precaution when mounting the battery, as batteries contain acid liquids which can cause severe injuries and damage when handled incorrectly. Refer to the instructions on the battery.
- No smoking is allowed in the area of the Battery Box!
- Please note that the CE socket has a max of 16 amp.
- This product meets the latest version of the EN 1648 part 1 and 2 standard.

Before placing the battery inside the Battery Box, the battery should be placed in the Soft Tray and rested on the ground adjacent to the Battery Box. Carefully connect the electrical wires (the red cable attaches to the + pole and the black cable to the - pole of the battery).

Note: Incorrect connection of the cables will cause a short circuit with potential hazardous consequences.

After mounting the terminals, lift the battery together with the Soft Tray into the middle of the Battery Box compartment. Push the battery to the back of the Battery Box.

The battery is then secured by restraining straps (see figure A).

When attaching the 230 volt cable on the CE socket, the maximum recommended thickness of the cable is 10 mm. When closing the door, the attached cable is to be fed through the slot in the door. The maximum battery size that can be fitted is 225mm high (including terminals) x 175mm deep x 353mm wide. The depth and width dimensions include the rim around the bottom used for securing the battery.

Figure A



Cleaning and maintenance

- Use protective clothing and glasses when handling a leaking battery, and avoid direct contact to the skin, eyes and respiratory organ.
- Should a battery leakage occur, please act according to the instructions supplied by the manufacturer of the battery. Act with caution as caustic substances are present in the battery.
- Always remove the battery and the power cable before carrying out any maintenance of the product.
- Before removing the clamps switch off all electrical and gas appliances.
- Use a soft cloth or sponge and a non-acid/abrasive detergent when cleaning the battery box or soft tray.
- To check if any acid is present in the soft tray or bag, simply press it softly. A strong smell from the soft tray may also indicate spilled acid. Always treat spilled battery acid as hazardous waste. Dispose of spilled battery acid according to the local and national regulations.
- Before the camping season or extensive travelling, check the soft tray or bag for faults and replace if necessary.
- The cleaning of the battery box and soft tray or bag should only be done after all power sources have been switched off, in order to prevent a hazardous situations.

BATTERY INSTALATION / SOLAR PANEL

Battery installation

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of terminals and 'topping up' if required.

⚠ WARNING: Explosive gases may be present at the battery. Take care to prevent flames and sparks in the vicinity.

Your caravan has been fitted with an in-line fuse between the battery terminal and caravan harness. It is recommended that the fuse rating fitted in this location does not exceed 20 amps.

⚠ WARNING: Switch off all electrical and gas appliances and lamps before connecting or disconnecting the battery. Smoking is prohibited around the battery compartment.

To preserve the life of your leisure battery and charger please observe the following:

1. Do not leave all 12V appliances powered at the same time as this will drain your leisure battery more rapidly.
2. If all 12V appliances must be powered together, ensure the battery is 'in-circuit' and that the battery charger is turned on.
3. For optimum performance use the transformer/charger unit with a leisure battery attached.

Battery

It is recommended that a good quality rechargeable leisure battery is always in circuit when the system is in use.

A deep cycling heavy duty 12V battery should be purchased to provide power for lights and other electrical appliances.

A proprietary brand leisure battery with a minimum of 85 Amp capacity is recommended.

Note: 85 Amp batteries and above should be checked dimensionally before purchasing, to ensure fitment within the battery compartment, as brands vary in size.

It should be remembered that batteries suitable for the electrical demands of a caravan differ in design from those for use with a car, and whilst the system may operate with a car battery it is strongly recommended that only a leisure type battery, maintained in good condition is used. The battery should be kept topped up at all times if required.

Solar panel connection point (where supplied - model specific)

A connection point has been included in the caravan electrical harness to take a 12V supply from an aftermarket solar panel (or similar device), to the caravan leisure battery.

The solar panel must provide a fused and regulated output in order to connect to this point. When fitted the connection point can be found inside the caravan adjacent to the battery box, in close proximity to the battery box fuse. Through the floor close to the battery box is a cable pass through, allowing a pair of wires from an externally located device to pass from exterior to interior to meet the connection point. This cable pass through will be capped both internally and externally with a cable entry gland.

A kit of parts is available from your caravan supplier which provides the mating half of the connection point. (The White rectangular connector found inside the caravan is a two way JST-LR type connector). For further assistance in identifying the connection, wire colours leading to the connector are detailed in the wiring schematic in your caravan service book.



Factory fitted Solar Energy System

Your tourer is fitted with a solar panel and regulator. This solar panel and regulator will provide additional 12v power whenever sunlight is available to the panel, and this will be directed to the leisure battery whether the control panel is ON or OFF, and regardless of the position of the SYSTEM SHUTDOWN button. If a factory fitted alarm system is present, that alarm will in turn be able to use the leisure battery as a power supply.

Conditions allowing, the system keeps the leisure battery 'topped up' during storage, and will provide a daily boost to the leisure battery when camping without a mains 230V supply.

Battery power

As a guide

An 80w panel is capable of supplying up to 4.8 amps, +/- 1.5%.



Regulator

Unlike typical regulators, the factory fitted solar panel regulator has been specially designed to draw no power from the leisure battery when the solar panel is not generating power. This feature is desirable especially in winter months when a normal regulator can gradually discharge the leisure battery.

Regulator operation

The regulator operates automatically, turning on and off as required to charge and maintain the leisure battery. When the solar panel is exposed to a source of sunlight the regulator starts to operate. When the voltage from the panel reaches a usable level, the Panel Output LED will flash indicating that the battery is being charged (see battery charging below). If insufficient power is being generated by the solar panel the regulator will turn off. The regulator checks the solar panel output every 30 seconds and turns on and off as required. On overcast days when the solar panel output is minimal the regulator can still deliver a small charge, and in this mode the LED's are not illuminated to conserve power.

GENERATOR / HABITATION RELAY / EXTERIOR 230V SOCKET

Battery charging

If a leisure battery is fitted and requires charging the Charge Status LED will illuminate. Depending on the state of charge of the battery this LED will illuminate red for bulk charge (14.4V output) or green for float charge (13.6V output). It may take a few hours to several days to charge the battery depending on its state of charge. When the battery is fully charged the regulator will turn off to prevent overcharging of the battery. If the mains charger is turned on to charge the leisure battery this can also cause the solar panel regulator to turn off.

Power Supply Unit

The PSU does not need to be switched on (shutdown button in) for the solar panel to charge the battery, but if the PSU has an LCD display then this can be used to see the increase in battery voltage as the solar panel charges the battery. During caravan storage the PSU should be shutdown (shutdown button out).

Control Panel

When the solar panel is operating the voltage display on the leisure battery will increase if the loads placed on the battery are sufficiently light.

Maintenance and cleaning

The solar panel will require cleaning periodically in order to maintain the performance of the panel, a caravan, car shampoo or simple soap can be used; no abrasive cleaners should be used.

Generator usage

Caution should be used before connecting a generator to your caravan.

⚠ WARNING: Never start or stop the generator while electrical loads are connected and switched on. Start the engine, let it stabilise, then connect the electrical load. To stop engine, disconnect the electrical load and let engine stabilise before switching off.

Whilst some generators use invertor technology, others use a more basic principle to generate the 230v supply. Preference should be to choose a generator which produces a consistent sinusoidal wave form with accurate voltage control.

The reverse polarity warning light may illuminate when using a generator. This is a normal side effect when using some types of generator. Instead of connecting the neutral and live conductors 110v above earth. This 110v difference causes the neon polarity indicator to illuminate.

In most cases it is safe to use a generator, but please consult the generator handbook for further information.

Habitation relay

Habitation relays are fitted to caravans by manufacturers to comply with the following legislation:

1. The Road Vehicles (Construction and Use) Regulations 1986 Regulation 60 - Radio interference suppression
2. European Community Whole Vehicle Type Approval (ECWVTA) framework directive 2007/46/EC and EU Regulation 661/2009 (General Safety) mandates UNECE Regulation 10 (Vehicles with regard to Electromagnetic compatibility)

A habitation relay must be fitted by manufacturers, safe guarding the consumer. The purpose of the relay is to disable non-homologated appliances/components whilst the vehicle is in transit.

INTERNAL USB SOCKET

Unintentional electromagnetic energy can be created by non-homologated devices within the habitation compartment, which could cause a malfunction of the caravan's electronic systems/components.

Exterior 230V socket

The recessed electric socket is designed to give you a convenient electrical access point on the outside of the caravan, which is completely protected from the weather, even when in use.

With the caravan stationary and connected to a 220v/240v supply, raise the front cover of the socket and insert the plug of the equipment to be used. Close and latch the cover into place to provide a weatherproof seal.

Please remember that the equipment plugged into the socket may or may not be weatherproof.

Note: Care should be taken when opening the socket cover.

To disconnect equipment, raise socket cover and remove plug, then close and latch the cover into place to ensure a weatherproof seal.

Before moving the caravan from a pitch ensure that all accessory points are disconnected and latched in the closed position to prevent the ingress of water or other foreign matter from causing damage to the point or any of the caravans services.

Any item plugged into this socket will be supplied by the same 10A breaker (MCB) as the other items plugged into sockets within the caravan. Please take into account the total loading placed on the socket circuit and the site supply before switching equipment on. The socket should be used to power a single appliance with an appropriate power consumption rating – **the socket is NOT suitable for use as a supply to power an adjacent caravan or motorhome.**

Internal USB Socket Provision



In addition to the 230v sockets and 12v sockets present on the binnacle at the front of the caravan. Elegance and Continental models have a USB power socket provided. This can be used with a variety of devices such as mobile phones, media players etc, as a power supply for continued running of the device or charging of the internal battery of that device. The socket provides a 5v output in line with the usual USB specification and is powered by the leisure battery and/or charger. The connecting lead between socket and device is not provided, as the format of this lead is device specific.

The fitted USB socket is limited to an output of 1amp – for larger devices such as tablets; use of the adjacent 12v socket with an appropriate adaptor may instead be required. Please check the instructions supplied with your device for further details.

Note: This USB socket does not provide a means of transferring or storing data, and so is not intended for use with memory sticks or other data storage devices.

ELECTRICS

ELECTRICS